

California Drought Update

For March 3, 2016
by Patrick Ruckert

<http://www.californiadroughtupdate.org>
<https://www.facebook.com/CaliforniaDroughtUpdate>
patruckert@hotmail.com

A Note To Readers

An alert went out early this week that El Nino is coming back, big time. An atmospheric river is due to hit the state on Saturday, and deliver, as some press reports put it, a deluge. We need it, but it will not yet be enough to put a big dent in the drought, but maybe at least a little one. Just one week ago, the forecasters published their views that March could be as dry as February, while hoping it would not be so. Now, all that has changed, which just goes to show how uncertain weather forecasting continues to be, but we are still suppose to believe the climate forecast for 50 years from now is settled.

Background on what is an atmospheric river is part of an article by NASA linked below. The drought actually intensified this past week, and nearly 40 percent of the state remains in the “exceptional drought” category, the most intense category.

There are a couple of summaries below of the state of the reservoirs, the water deficit over the past four years, and, of course, what is required to break the drought.

“No man is an island,” and no state alone can build the infrastructure that California requires. Unless this truth grabs you, as you will read below, you will join the others fighting each other for the last drop of water.

The presentation by Helga Zepp-LaRouche at a major international conference in India on March 2, exemplifies the policy that must be the policy of the Presidency of the United States.

<https://larouchepac.com/20160303/helga-zepp-larouche-addresses-raisina-dialogue-india#.VthpPyae6M.facebook>

Finally, this, not connected to the drought per se, but demonstrating the state of the nation and another symptom of the bankrupt economic system dominated by Wall Street: A new report issued this week from the *National Center for Children in Poverty* states that:

Nearly half of children in the US live dangerously close to the poverty line and more kids today are likely to live in families barely able to afford their most basic needs, a new report has claimed.

The report by researchers from the National Centre for Children in Poverty (NCCP) at Columbia University illustrates the severity of economic instability and poverty conditions faced by more than 31 million children throughout the US.

According to researchers, the number of poor children in the US grew by 18 per cent from 2008 to 2014, and the number of children living in low-income households grew by 10 per cent.

More than four in 10 US children are living close to the poverty line. In 2014, 44 per cent of children under age 18 (31.4 million) lived in low-income households and 21 per cent lived in poor families (15.4 million), the report stated.

That leads us to Part II of our series on real economics.

Real Economics: Part II

Last week in Part I of this series, we introduced the concept of energy-flux density as the physical measure of an economy. As we stated last week, our subject is real economics-- physical economy. That is, the physical transformation of all that surrounds mankind, both the environment around him and the social, political and cultural structures he creates. What we mean by economy is not money, stocks, bonds, derivatives or any other paper measure of sometimes real, but mostly speculative, financial activity. This week we continue the discussion of physical measures of economic processes with the concluding section of the article by Jason Ross in *Executive Intelligence Review* of August 8, 2014, "Energy-Flux Density: Global Measure of Economic Progress."

http://larouche.com/eiw/public/2014/eirv41n31-20140808/43-48_4131.pdf

A Global Measure of Economy: Potential Relative Population Density

Most economists seek to determine the overall productivity of a national economy through metrics which add together the monetary value of various components of the economy, resulting in such measures as gross domestic product. The problems with such an approach are two-fold:

1. Economic activity counting towards GDP may or may not be conducive or necessary to reaching more developed states of the economy, and may indeed be positively harmful even if not currently illegal (such as drugs, solar panels, prostitution, degrading forms of entertainment, gambling, biofuels, and financial speculation).
2. Rather than looking at economic activity per se, it is necessary to look at economic activity in the context of development overall. Does our measure include within it the economic powers which we are capable of reaching?

Does it measure progress itself? Instead of a bottom-up approach, LaRouche has developed a strikingly simple concept to understand an economy as a whole—*potential relative population density*. The population density aspect is the familiar measure of the number of people per square kilometer of land.

This must be considered relative to the quality of the land, and of human improvements to it. With this in mind, we consider the potential level of the relative population density: How many people could a society or economy possibly support in a given area of land?

What determines this value? The potential relative population density (PRPD) is bounded by the scientific principles known to a given culture, and by the capability of that culture to implement such discoveries, through technological advancements, for example.

The breakthroughs in physical chemistry each transformed the PRPD, by their improvements of the potential productive powers of labor, as have: agriculture (including irrigation); windmills (centuries ago); the forging of modern science by the work of Filippo Brunelleschi, Nicolaus of Cusa, and Johannes Kepler; the germ theory of disease; vaccines; steam-powered and internal combustion engines; the Bessemer and later oxygen steel production processes; and such production techniques as standardization and automation— just to name a few.

The combined set of discoveries and cultural framework for their implementation determines the PRPD. Rather than adding up currently occurring economic activity (including undesired activity) the PRPD measure indicates the potential economic activity and human life an economy is capable of supporting. The rate of growth of PRPD is the best measure of increasing economic value.

Next week in Part III, The Central Valley Project: An example of Physical Economy at its best.

The Weather: Who Knows; An El Nino Resurrection? Maybe

So, last week the forecasters were telling us that March may be like February-- dry. Now this week they inform us that, hey, we were wrong, an atmospheric river is going to pound California with inches of rain and feet of snow starting this weekend. April 1 is when water officials try to estimate how much water will be available for the coming summer from the snowpack and reservoir levels, which means March is most likely the last chance to dent the drought.

This is from *AccuWeather.com* on March 2: "El Nino-driven storms to dent California's drought with inches of rain next week," by Brett Rathbun.

<http://www.accuweather.com/en/weather-news/el-nino-driven-storm-inches-of-rain-snow-los-angeles-san-francisco-california/55749069>

Following a warm, dry February in California, a shift in the weather pattern will open the door for several storms to soak the state during the second week of March.

Enough rain may fall to put a noticeable dent in the drought across the state.

By the end of this weekend, storms will usher in moderate to heavy rain across California and heavy snow to the Sierra Nevada.

"A large area of low pressure will move from the central to the eastern Pacific Ocean by this weekend causing storms to steer into California," AccuWeather Senior Meteorologist Dave Samuhel said.

Inches of rain may fall from San Diego and Los Angeles to San Francisco and Sacramento through next week. Up to a foot of rain could fall across portions of northern California, including Crescent City.

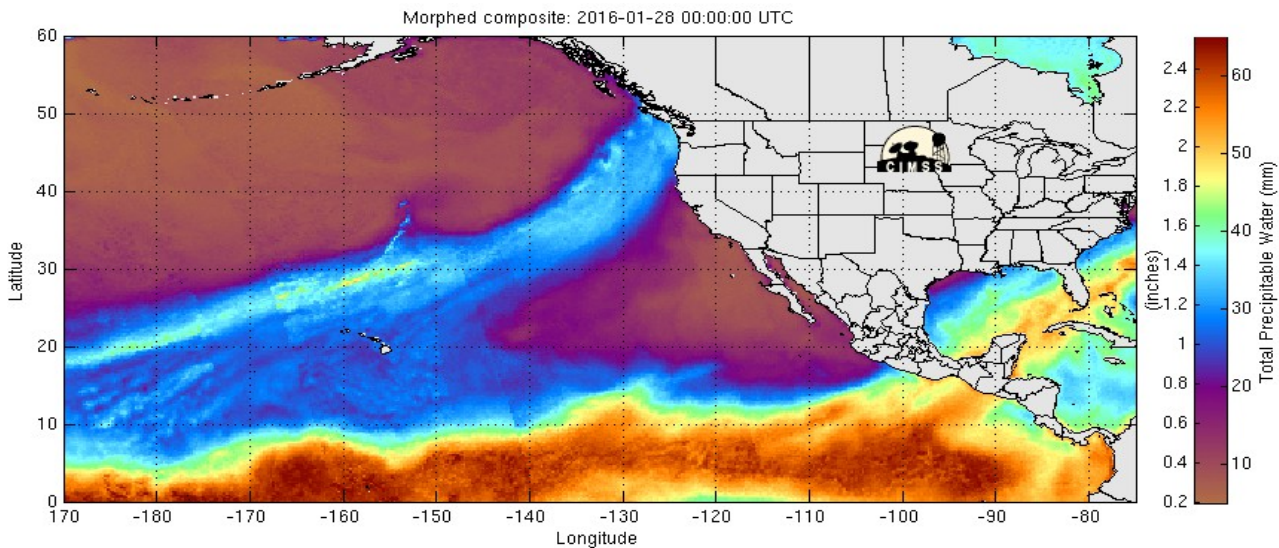
In the Sierra Nevada, snow will accumulate by the foot.



AccuWeather.com

A word on the “atmospheric river, forecast to hit on Saturday.” Here is a paragraph from an article by NASA on March 2, which also discusses how, if the downpour is too warm, an atmospheric river can melt the snow already on the ground. The graphic accompanying the article is excellent. “Study: Atmospheric river storms can reduce Sierra snow.” <http://climate.nasa.gov/news/2409/>

Atmospheric rivers are narrow jets of very humid air that normally originate thousands of miles off the West Coast, in the warm subtropical Pacific Ocean. When the warm, moist air hits the Sierra Nevada and other high mountains, it drops much of its moisture as precipitation. Only 17 percent of West Coast storms are caused by atmospheric rivers, but those storms provide 30 to 50 percent of California's precipitation and 40 percent of Sierra snowpack, on average. They have also been blamed for more than 80 percent of the state's major floods.



Animation of an atmospheric river storm that occurred on Jan. 28 through 30, bringing half an inch to an inch of rain to many locations in central and southern California. Credit: University of Wisconsin/CIMSS.

So, with the storm coming in, we have seen an end to all the headlines that had dominated the media for the past two weeks, like this one from the *San Francisco Chronicle*, “What if El Niño is a big

bust?” And this one from *ABC News*: “Has El Niño forgotten California?”

The question now being raised is, what should we look for the rest of the year? According to some, more restrictions on water use for everyone. The *San Jose Mercury News* article by Paul Rogers on March 22, “El Niño: Summer drought rules likely to continue unless big storms come in March and April,” includes the following: http://www.mercurynews.com/drought/ci_29548644/el-nino-summer-drought-rules-likely-continue-unless

But state water officials said Monday that unless the rainy weather returns with a vengeance, some drought restrictions are likely to continue this summer.

"It's already a less dire situation, given the precipitation we have received so far this winter," said Max Gomberg, climate and conservation manager for the State Water Resources Control Board.

"But it would have to rain almost every day -- storm after storm after storm -- in March for there to be no drought rules this summer."

And this opinion column from the *Sacramento Bee* on March 2 by Peter Gleic, which, after a useful summary of where we stand, goes into a rant about conservation, and not a word about increasing new water supplies by building storage and desalination plants. “Water conservation efforts must expand in fifth year of drought.” <http://www.sacbee.com/opinion/op-ed/soapbox/article63586367.html>. Excerpts:

The drought has dried our wetlands, parched our soils, damaged fisheries, depleted our reservoirs, and hurt some farms and rural communities. According to the [National Drought Mitigation Center](#), 99 percent of the state remains in drought, with nearly 40 percent in “exceptional drought” – the most extreme condition.

Even the moderate amounts of rain and snow we’ve received since October have done little to refill reservoirs, and there is no chance that the current levels of rain and snow will come close to recharging our dangerously overpumped groundwater, which have lost more than 8 trillion gallons (about 25 million acre feet) in the past four years.

The snowpack in the Sierra Nevada, while greater than last year’s record lows, remains below average for this time of year. Worse, a dry and hot February rapidly melted the snow that has fallen. Current [statewide snow water content](#) is about 80 percent of normal – a figure that will grow with coming storms but is still below what is needed.

Four years of drought have also drained the state’s extensive storage of water in our reservoirs. The 12 largest reservoirs began the winter with a shortfall of more than 2.2 trillion gallons of water (7 million acre feet). Even with the rains this winter, the shortfall remains at nearly 1.8 trillion gallons (5.5 million acre feet), a modest but completely insufficient improvement. That deficit is as much water as Metropolitan Water District of Southern California’s 19 million customers use in 2½ and a half years.

What should we do? Conservation efforts must remain in place and even expand. Education about the need to save water must continue. New financial aid must be made available to rural communities without safe and reliable water and to farmers and cities seeking to modernize water systems. And we must accelerate [investments in the treatment and reuse of wastewater, stormwater capture, and programs for improving urban and agriculture water-use efficiency](#).

The Snowpack

The Department of Water Resources issued the following announcement on March 1, reporting on the damage the warm, dry February did to the snowpack. Excerpts:

The statewide snowpack – source of much of the California’s water supply – is only 83 percent of the March 1 average, the result of moderate precipitation since last October and relatively warm temperatures.

[The statewide readings](#) suggest this may not be a drought-busting year unless California receives heavy rain this month as it did during the “March Miracles” of 1991 and 1995.

“Right now, we’re obviously better than last year but still way below what would be considered adequate for any reasonable level of recovery at this point,” Gehrke said.

Electronic readings of northern Sierra Nevada snow conditions found 23.1 inches of water content 83 percent of normal for March 1), 212.7 inches in the central region (85 percent of normal) and 16.6 inches in the southern region (73 percent of normal).

In normal years, the snowpack supplies about 30 percent of California’s water needs as it melts in the spring and early summer. The greater the snowpack water content, the greater the likelihood California’s reservoirs will receive ample runoff as the snowpack melts to meet the state’s water demand in the summer and fall.

Results of today’s manual readings by DWR near Echo Summit are as follows:

Location	Elevation	Snow Depth	Water Content	% of Long-Term Average
Alpha	7,600 feet	60.5 inches	22.5 inches	77
Phillips Station	6,800 feet	58.3 inches	27.1 inches	105
Lyons Creek	6,700 feet	70.5 inches	27 inches	93
Tamarack Flat	6,550 feet	60 inches	25 inches	97

Reservoir and Groundwater Storage Conditions

A useful summary of reservoir and groundwater storage conditions can be found in the February 28 californiawaterblog.com, posted by Jay Lund. Excerpts follow:

<https://californiawaterblog.com/2016/02/28/enso-the-drought-strikes-back-the-2016-drought-so-far-march-1/>

Major reservoirs in California continue to fill much more than last year, but overall remain substantially less than the historical average for this time of year. Some reservoirs, such as Folsom, have filled their water supply levels and are encroached into their normally-reserved flood storage capacity. But California’s reservoir storage remains about 6 maf (about 6 full Folsom reservoirs) less than average for this time of year. Groundwater statewide will be making some recovery but will be a long way from recovering from drought in many places.

The drought by 2015 depleted total storage in California by about 22 maf cumulatively or nearly a year’s worth of water use in agriculture. Soil moisture conditions were also unusually dry following 2015, diverting and delaying some runoff from early storms. Storage is recovering during this wet

season, but still has a good bit to go, probably 17-20 maf of drought storage drawdown remains.

We are looking at another drought year, with lingering drought effects even if the next two months are quite wet.

Let's Fight Over Water

Almost two years ago, I wrote that the policy of the Brown administration and the California State Water Board would soon have everyone fighting everyone for that last drop of water. And so it is. Brown's edict that urban areas cut consumption by 25 percent set city residents into a fit against farmers, with the press and the water board neglecting to inform them that farmers had already been cut by 80 percent or more. Then the Water Board carried out a slow torture policy all last year of first cutting off those farmers with secondary water rights, then cutting off those with senior water rights, and finally even cutting off those with water rights that went all the way back to the 1860s.

In addition, article after article has highlighted the plight of those in East Porterville and other areas in the Valley who have wells that have run dry, blaming it on agriculture pumping so much water that the water table falls below the depth of the affected wells. Meanwhile, the state and county authorities do little or nothing to ensure the affected people get hooked up to a water supply.

Now, this year, so far, as the Water Board and Wildlife have poured the January rains into the Delta, and farmers, as expected, are railing against the saving of the Delta Smelt at the expense of agriculture and urban areas. As I have reported, hundreds of thousands of acre-feet that could have been sent to storage, instead was allowed to go to the sea.

Here are some excerpts from the *farmwater.org* website, which calls for a fight-- with fishermen.
http://farmwater.org/farm-water-news/water_counter/

The bleeding of agriculture

In less than 90 days between December 1, 2015 and February 23, 2016, 184 billion gallons of water has been flushed out through the San Francisco Bay. That's enough water to supply over 3.3 million Californians with enough domestic water for a year, or to produce 9 billion salads. At the same time, CalTrans' electronic billboards continue to urge people to reduce their water use.

These actions are supposedly meant to prevent harm to threatened and endangered Delta smelt and winter run Chinook salmon. Sadly, after years of trying the same tactic over and over, flushing all this water to the ocean has shown no measurable ecosystem benefits and instead resulted in a monumental waste of water.

Maybe not responding directly to the above, the Salmon fishermen have jumped in demanding that even more water be allowed to flow through the Delta. A statement from the *Golden Gate Salmon Association*, dated March 1 was covered by *mavensnotebook.com*:

<http://mavensnotebook.com/2016/03/01/news-worth-noting-2016-salmon-projection-down-due-to-drought-water-mismanagement-san-joaquin-river-restoration-program-water-year-2016-restoration-administrator-recommendations-for-provisional-flow/>

Here are a few excerpts from the statement:

2016 Salmon Projection Down Due to Drought, Water Mismanagement

GGSA calls on Congress to dump proposals that would worsen conditions

The Pacific Fisheries Management Council (PFMC) forecasts 299,600 Sacramento River adult fall run king salmon are in the ocean off the California and Oregon coast. This compares to forecasts above 600,000 the last several years. When coupled with poor 2015 Klamath salmon returns and concern for federally protected winter run, the forecast points to a restricted 2016 fishing season. The lower than normal forecast is caused by drought conditions and water management decisions that harmed salmon the last four years in the Central Valley. These have greatly decreased survival of wild salmon eggs and juveniles. The relatively low forecast for 2016 salmon comes as two federal bills in Congress threaten to take even more of the water needed to keep our salmon runs healthy.

“The projection for 2016 salmon makes clear the damage done by water diversions and drought the last several years. The 2016 salmon number means more protections are needed in the Delta and Central Valley salmon habitat, not less,” said GGSA executive director John McManus. “Any politician proposing more water diversions now from the Delta needs to look at the salmon numbers and stop proposing more harm to salmon and our coastal communities.”

The Alternative to Fighting

The alternative is to revive how we used to think. We used to live in the future, planning today what the real future would be 30, 40 or 50 years ahead. That is the kind of thinking that built the Central Valley Project and the State Water Project. That is the kind of thinking that led the President John Kennedy administration to propose and to begin the implementation of the building of nuclear-powered desalination plants and to move forward with the North American Water and Power Alliance.

[Nuclear-Powered Desalination in California– Parts I-IV: <http://www.californiadroughtupdate.org/?s=history+of+nuclear+powered+desalination>](http://www.californiadroughtupdate.org/?s=history+of+nuclear+powered+desalination)

NAWAPA 1964 -- Feature Film: <https://www.youtube.com/watch?v=c0QS9AaMfvY>

We must think big once again; revive those two programs and more. To do so requires a political revolution, beginning with, as I have written before, this:

First, recognize that this is not a California water crisis, but a political, cultural and economic crisis of the nation. There has been zero water infrastructure built in this state in more than 40 years-- we ceased creating a future for ourselves and for future generations. After the death of President Kennedy, and the death of his policies of building nuclear-powered desalination plants and the North American Water and Power Alliance, the nation gave up the idea of progress and development and turned the nation into a speculative gambling casino with an ideology of environmentalism to match.

Second, the central issue to be put on the table is the real nature of progress; the real nature of progress for mankind. Mankind is the only species that creates his own future through the action of the creative power of his mind. It is scientific discovery, and applying that to increasingly master the universe that that future is created. By allowing that to be destroyed we are creating the conditions for our own extinction.

Third, creating new sources of water requires the recognition that processes on our planet, like the water cycle, are largely determined, not by processes on Earth, but by galactic forces like cosmic radiation which affects how water vapor behaves-- whether there are clouds, where they are located, and when precipitation falls. Initial experiments in several nations of artificially ionizing the atmosphere have demonstrated initial success in increasing rainfall. An aggressive program to put

such experiments into action must be carried out now.

Providing more water to this state and to all arid areas of the world depends upon unleashing the creative power of mankind to discover how to control those processes. That is the fundamental solution. That requires a new Presidency; it requires the restoration of the Glass-Steagall Act to bankrupt this speculative system; and it requires a return to classical principles of culture to once again unleash the creative powers of our people.

In the meantime, an Apollo Project-style mobilization to build desalination plants over the next few years is what is required to minimize the current disaster. The Carlsbad desalination plant now being built will begin delivering 50 million gallons of water per day to San Diego later this year. That facility will have taken less than two years to build. By putting the construction of dozens of plants, from San Francisco Bay to San Diego, on a 24 hours a day/ 7 days per week schedule, in less than a year, rivers of water will flow from the sea to the land. Providing the electricity required will require another crash program to build nuclear power plants. We have accomplished such great tasks before, and we can do it again.

At the same time, recognizing and acting to end the domination of the state by the Brownshirts of the California State Water Board, whose actions of sending millions of acre-feet of water out to sea to protect fish at the expense of human needs, can immediately prevent the further destruction of food production and end the environment of virtual terror they have created.

Next week: The Water Priorities Initiative